Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended) A solenoid actuator for linearly actuating a device, comprising:

a) a primary pole piece having a first annular portion;

b) a secondary pole piece having an outer axial face oriented away from said device and a second annular portion, said second portion being axially separated from said first portion to form an air gap therebetween; ~~and~~

c) an armature disposed for slidable axial motion within said first and second annular portions, said armature having a side wall terminating in a leading face oriented toward said device and a trailing face oriented away from said device, wherein said leading face and said trailing face are each substantially orthogonal to the direction of said axial motion, and wherein said trailing face remains outside said secondary pole piece at all axial positions of said armature; and

d) a spring positioned between said primary pole piece and said armature.

2. (Original) A solenoid actuator in accordance with Claim 1 wherein said first annular portion of said primary pole piece is tapered.

3. (Original) A solenoid actuator in accordance with Claim 1 wherein said second annular portion of said secondary pole piece is tapered.

4. (Currently amended) A poppet valve assembly for proportionally controlling flow of a fluid, the assembly including a solenoid actuator comprising:

a) a primary pole piece having a first annular portion;

b) a secondary pole piece having an outer axial face oriented away from said device and a second annular portion, said second portion being axially separated from said first portion to form an air gap therebetween; ~~and~~

c) an armature disposed for slidable axial motion within said first and second annular portions, said armature having a side wall terminating in a leading face oriented toward said device and a trailing face oriented away from said device, wherein said leading face and said trailing face are each substantially orthogonal to the direction of said axial motion, and wherein said trailing face remains outside said secondary pole piece at all axial positions of said armature; and

d) a spring positioned between said primary pole piece and said armature.

5. (Original) A poppet valve assembly in accordance with Claim 4 wherein said assembly is an exhaust gas recirculation valve and wherein said fluid is exhaust gas from an internal combustion engine.

6. (Previously presented) A poppet valve assembly for proportionally controlling flow of a fluid, the assembly including a solenoid actuator comprising:

a) a primary pole piece having a first annular portion;

b) a secondary pole piece having an outer axial face oriented away from said device and a second annular portion, said second portion being axially separated from said first portion to form an air gap therebetween;

c) an armature disposed for slidable axial motion within said first and second annular portions, said armature having a side wall terminating in a leading face oriented toward said device and a trailing face oriented away from said device, wherein said leading face and said trailing face are each substantially orthogonal to the direction of said axial motion, and wherein said trailing face remains outside said secondary pole piece at all axial positions of said armature; and

d) a pintle carried by said armature, said pintle extending through an axial bore in each of said primary pole piece and said secondary pole piece.

7. (New) A solenoid actuator for linearly actuating a device, comprising:

a) a primary pole piece having a first annular portion;

b) a secondary pole piece having an outer axial face oriented away from said device and a second annular portion, said second portion being axially separated from said first portion to form an air gap therebetween, said second annular portion of said secondary pole piece being tapered; and

c) an armature disposed for slidable axial motion within said first and second annular portions, said armature having a side wall terminating in a leading face oriented toward said device and a trailing face oriented away from said device, wherein said leading face and said trailing face are each substantially orthogonal to

the direction of said axial motion, and wherein said trailing face remains outside said secondary pole piece at all axial positions of said armature.